REMARKS

Status of Claims:

Thus, claims 10-18 and 20-44 are present for examination.

Prior Art Rejection:

Claims 10, 11 and 14-18, 20-22, 25-32, 33-34 and 37-44 stand rejected under 35 U.S.C. § 103 as obvious over Nomura (CA 2,112,145) in view of applicant's admitted prior art APA. Further, claims 12, 13, 23, 24, 35 and 36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Nomura in view of APA and further in view of Takada (US 6,088,670). The Examiner's rejections are respectfully traversed.

Applicant's claim 10 recites:

> 10. (Currently Amended) A speech signal decoding apparatus comprising:
>
> a plurality of decoding means for decoding information containing at least a sound source signal, a gain, and filter coefficients from a received bit stream;
>
> identification means for identifying voiced speech and unvoiced speech of a speech signal using the decoded information, at least the unvoiced speech containing a background noise;
>
> smoothing means for performing smoothing processing based on the decoded information for at least either one of the decoded gain and the decoded filter coefficients in the speech identified by said identification means in order to provide enhanced coding quality for at least the unvoiced speech with the background noise;
>
> means for obtaining an excitation signal by multiplying the decoded sound source signal by the decoded gain after performing the smoothing processing; and
>
> means for decoding the speech signal by driving a filter having the decoded filter coefficients by the excitation signal obtained from the means for obtaining.

The primary prior art reference to Nomura neither discloses nor suggest the use of a smoothing processing means or device for enhancing the coding quality for the speech signal containing a background noise. The underlined portions of claim 10 set forth above emphasize this distinguishing limitation of applicant's claim. Moreover, similar limitations appear in all of applicant's independent claims.

In paragraph 7, lines 5-7 of the outstanding office action, under the heading "Response to Arguments", the examiner states: "The examiner disagrees with applicant's above assertion because frame error could occurred based on the background noise ---". However, the examiner is incorrect.

"Frame error" refers to the **data transmission error** of a bit included in the data transmitted in frame (a bit stream). "**Background noise**" is defined as **background original sound** and is transmitted as part of the original speech signal but it is not actually speech. This background sound is to be distinguished from speech. However, the background noise is **part of original signal before being transmitted** and is thus seen to be **completely unrelated to the bit error in the data transmission**. It is obvious that there is no causal relation between a sound signal and the bit error in the data transmission.

In view of the above, applicant's argument previously presented, namely that the "object of the reference [Nomura] is to reproduce a speech signal for the frame with errors (to apply the above-mentioned processing to only the frame with errors), and it is completely different from the present invention which aims at an improvement of the sound quality of the background noise" is in fact a true statement, that shows the inapplicability of the reference to applicant's recited invention.

With regard to the Sec. 103, rejection, it is described on page 3, lines 7-11 of the office action that the "smoothing means for performing --- the background noise" recited in applicant's claims is described on page 7, lines 1-13, of Nomura. This section of Nomura reads:

> The bad frame masking unit 150 for voiced frame, interpolates the speech signal by using the data of the previous and current frames and outputs the result to the output terminal 190. The bad frame masking unit 160 for unvoiced frame interpolates the speech signal by using data of the previous and current frames and outputs the result to the output terminal 190."

However, more relevant to the present claims is the portion of Nomura discussing using the gain and filter coefficients. This discussion occurs on page 9, lines 1-13, of Nomura wherein it is stated:

> A signal that is obtained by multiplying the excitation code vector by the **gain** of the **previous frame** that has been stored in the data memory 120, and a signal that is obtained by multiplying the adaptive code vector output form an adaptive codebook 330 with the compensated adaptive codebook delay **by the gain of the previous frame** that has been stored in the data memory 120, are added together, the resultant sum is output to a synthesis filter 350. The synthesis filter 350 synthesizes speech signal by using a **previous frame filter coefficient** stored in the data memory 120 and outputs the resultant speech signal to an amplitude controller 360. The amplitude controller 360 executes amplitude control by using the **previous frame** rms stored in the data memory 120, and it outputs the resultant speech signal to an output terminal 370. (Emphasis added).

As may be seen from the above emphasized words, Nomura only discloses using **the gain of the previous frame**, and **no description** whatsoever is made at all that the gain obtained with a **current frame** is smoothed, or some kind of processing is made which resembles smoothing. Similarly, the **filter coefficients** refers to only **"a previous frame filter coefficient"**, and no description whatsoever is made at all that the filter coefficient obtained with a **current frame** is smoothed, or some kind of processing is made which resemble smoothing.

The fact that Nomura does not disclose using the gain and filter coefficients of the current frame is **not surprising** and is due, in fact, to the **bit error** obtained during transmission discussed above. Therefore, instead of the gain and the filter coefficient at the current frame which cannot be used when generating speech (at the current frame), Nomura

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ONLY uses the gain and the filter coefficient at a previous frame. Nomura is completely silent as to smoothing the gain and the filter coefficient at the current frame when the speech (of the current frame) is generated.

In this connection, we note that the above is argument is further strengthened in the language of claim 1, lines 23-25, of Nomura, describing that "by using said spectral data, --- and said gain data of the **previous frame**".

On the other hand, the current invention is based on the premise that <u>the gain and the filter coefficient at the current frame are used</u>. And a new gain and a new filter coefficient are obtained by <u>smoothing the gain and the filter coefficient at the current frame using the gain and the filter coefficient at the previous frame</u>.

As stated above, it is clear that no description has been made by Nomura that <u>a new gain and new filter coefficient are obtained using the gain and the filter coefficient at the current and the past frames</u>, which is the feature of the current invention.

The above arguments are applicable to all of applicant's independent claims. Applicant's dependent claims are deemed patentable at least by virtue of their dependency.

In view of the arguments set forth above, it is submitted that all of applicant's claims are clearly patentable over the prior art, and that the PTO has not made out a *prima facie* case of obviousness under the provisions of 35 U.S.C. § 103.

Conclusions:

The application is believed to be in condition for allowance and an early indication of same is earnestly solicited.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or

even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date September 2, 2005   By _____

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